Lloyd's Register

Rules for the Manufacture, Testing and Certification of Materials, July 2008

Notice No. 2

Effective Date of Latest Amendments:

See page 1

Issue date: December 2008

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RULES FOR THE MANUFACTURE, TESTING AND CERTIFICATION OF MATERIALS, *July 2008*

Notice No. 2

This Notice contains amendments within the following Sections of the *Rules for the Manufacture, Testing and Certification of Materials, July 2008.* The amendments are effective on the dates shown:

Chapter	***Section***	***Effective date***
3	1, 2, 3	1 January 2009
13	4	Corrigendum

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules for the Manufacture, Testing and Certification of Materials July 2008* are to be read in conjunction with this Notice No. 2. The status of the Rules is now:

Rules for Materials	Effective date:	July 2008
Notice No. 1	Effective date:	1 August 2008
Notice No. 1	Effective date:	1 January 2009 & Corrigendum

Chapter 3

Rolled Steel Plates, Strip, Sections and Bars

Effective date 1 January 2009

■ *Section 1*
General requirements

1.1 Scope

1.1.1 This Section gives the general requirements for hot rolled plates and sections intended for use in the construction of ships, other marine structures, machinery, boilers and pressure vessels. ~~These requirements are also applicable to hot rolled bars, except where such materials are intended for the manufacture of bolts, plain shafts, etc., by machining operations only. Where used for this purpose hot rolled bars are to comply with the requirements of Chapter 5.~~

1.1.2 This chapter is not applicable to hot rolled bars intended for the manufacture of bolts, plain shafts, etc., by machining operations only. Where used for this purpose, hot rolled bars are to comply with the requirements of Chapter 5.

1.1.3 Plate and strip which is hot coiled after rolling and subsequently uncoiled, cold flattened and cut to the required dimensions are also subject to the appropriate requirements of this Chapter.

~~*1.1.2*~~ *1.1.4* ~~These items~~ Plates, strip, sections and bars are to be manufactured and tested in accordance with the requirements of Chapters 1 and 2, the general requirements of this Section and the appropriate specific requirements given in Sections 2 to 10.

~~*1.1.3*~~ *1.1.5* As an alternative to ~~1.1.2~~ 1.1.4, materials which comply with National or proprietary specifications may be accepted, provided that these specifications give ~~reasonable~~ equivalence to the requirements of this Chapter or are approved for a specific application. Particular attention is to be taken of the minimum required under thickness tolerance, *see* ~~1.6~~ 1.5. Generally, survey and certification of such materials are to be carried out in accordance with the requirements of Chapter 1.

~~*1.1.4* Strip material which is hot coiled after rolling and subsequently uncoiled, cold flattened and cut to the required dimensions is to be subject to the appropriate requirements of this Chapter.~~

1.11 Certification of materials

1.11.1 Each test certificate ~~or shipping statement~~ is to include the following particulars:

(a) Purchaser’s name and order number.
(b) If known, the contract number for which the material is intended.
(c) Address to which material is dispatched.
(d) Name of steelworks.
(e) Description and dimensions of the material.
(f) Specification or grade of the steel.
(g) Identification number of piece, including test specimen number where appropriate.
(h) Cast number and chemical composition of ladle samples.
(j) Mechanical test results (not required on shipping statements).
(k) Condition of supply.

1.11.2 Before the test certificates ~~or shipping statements~~ are signed by the Surveyor, the steelmaker is required to provide a written declaration stating that the material has been made by an approved process, and that it has been subjected to and has withstood satisfactorily the required tests in the presence of the Surveyor, or an authorized deputy. The following form of declaration will be accepted if stamped or printed on each test certificate ~~or shipping statement~~ with the name of the steelworks and signed by an authorized representative of the manufacturer:

> ‘We hereby certify that the material has been made by an approved process and satisfactorily tested in accordance with the Rules of Lloyd’s Register’.

1.11.4 The manufacturer of coiled plate is required to issue a certificate which clearly identifies the material as coil. The certificate issued should include the words; ‘Coils covered by this certificate require further processing at a works approved by Lloyd's Register before being certified as plate in accordance with the Rules of Lloyd's Register’ in addition to the requirements of 1.11.2.

1.11.5 The supplier of plate cut from coil is required to issue a certificate which clearly identifies the product as finished plate meeting the requirements of the Rules in accordance with 1.11.2.

~~*1.11.4*~~ *1.11.6* The form of certificates produced by computer systems is to be agreed with the Surveyor.

■ *Section 2*
Normal strength steels for ship and other structural applications

2.2 Manufacture and chemical composition

2.2.4 For plate supplied from coil, the chemical analysis can be transposed from the certificate of the coil manufacture onto the re-processor's certificate.

2.4 Mechanical tests

2.4.1 The results of all tensile tests and the average energy value from each set of three impact tests are to comply with the appropriate requirements given in Table 3.2.3 except where enhanced by the requirements of this Section.

~~2.4.1~~ 2.4.2 With the exception given in ~~2.4.2~~ 2.4.4, one tensile test is to be made for each batch presented unless the ~~weight~~ mass of finished material is greater than 50 tonnes, in which case one test is to be made from a different piece from each 50 tonnes or fraction thereof. Additional tests are to be made for every variation of 10 mm in the thickness or diameter of products from the same cast. For sections, the thickness to be considered is the thickness of the product at the point at which samples are taken for mechanical tests. A piece is to be regarded as the rolled product from a single slab or billet, or from a single ingot if this is rolled directly into plates, strip, sections or bars.

2.4.3 For Grades A and B where plate is supplied from coil, results of the tensile test can be transposed from the certificate of the coil manufacture onto the certificate issued by the re-processor. If the coil mass exceeds 50 tonnes, testing will additionally be required from two locations representing the start and end of the coil. For Grades D and E, the mechanical properties must be sampled from the de-coiled plate in accordance with the frequency specified in the Rules.

~~2.4.2~~ 2.4.4 For plates of thickness exceeding 50 mm in Grade E steel, one tensile test is to be made on each piece.

~~2.4.3~~ 2.4.5 For Grade A steel, Charpy V-notch impact tests are not required ~~for routine acceptance test purposes~~ when the thickness does not exceed 50 mm, or up to 100 mm thick if the material is supplied in either the normalized or thermo-mechanically controlled-rolled condition and has been fine grain treated. However, the manufacturer should confirm, by way of regular in-house checks, that the material will meet a requirement of 27 J at +20°C. The results of these checks shall be reported to the Surveyor. The frequency of these checks should as a minimum be every 250 tonnes.

~~2.4.4~~ 2.4.6 When Grade A steel is supplied in the normalizing rolled condition or when special approval has been given for material thicker than 50 mm to be supplied in the as-rolled condition, a set of three impact test specimens are to be tested from each batch of 50 tonnes or fraction thereof.

~~2.4.5~~ 2.4.7 Impact tests are ~~generally~~ not required for Grade B steel of 25 mm or less in thickness. However, the manufacturer is to confirm, by way of regular in-house tests, and on occasional material selected by the Surveyor, that the material meets the requirement in Table 3.2.3. The results of the tests are to be reported to the Surveyor. The frequency of the in-house checks are to be, as a minimum, one set of three impact test specimens for every 250 tonnes.

~~2.4.6~~ 2.4.8 For Grade B steels of thicknesses above 25 mm, supplied in the as-rolled or normalizing rolled condition, one set of three impact test specimens is to be made from the thickest item in each batch presented. If the ~~weight~~ mass of finished material is greater than 25 tonnes, one extra set of tests is to be made from a different piece from each 25 tonnes or fraction thereof.

~~2.4.7~~ 2.4.9 For Grade B steels of thicknesses above 25 mm, supplied in the furnace normalized or thermomechanically controlled-rolled condition, one set of three impact test specimens is to be made from the thickest item in each batch presented. If the ~~weight~~ mass of finished material is greater than 50 tonnes, one extra set of tests is to be made from a different piece from each 50 tonnes or fraction thereof.

~~2.4.8~~ 2.4.10 For Grade D steels supplied in the as-rolled or normalizing rolled condition, one set of three impact test specimens is to be made from the thickest item in each batch presented. If the ~~weight~~ mass of finished material is greater than 25 tonnes, one extra set of tests is to be made from a different piece from each 25 tonnes or fraction thereof.

~~2.4.9~~ 2.4.11 For Grade D steels, supplied in the furnace normalized or thermomechanically controlled-rolled condition, one set of three impact test specimens is to be made from the thickest item in each batch presented. If the ~~weight~~ mass of finished material is greater than 50 tonnes, one extra set of tests is to be made from a different piece from each 50 tonnes or fraction thereof.

Existing paragraphs 2.4.10 to 2.4.13 are to be renumbered 2.4.12 to 2.4.15.

■ *Section 3*

Higher strength steels for ship and other structural applications

3.4 Chemical composition

3.4.7 For plate supplied from coil, the chemical analysis can be transposed from the certificate of the coil manufacture onto the re-processor's certificate.

3.6 Mechanical tests

3.6.1 The results of all tensile tests and the average energy value from each set of three Charpy V-notch impact tests are to comply with the appropriate requirements given in Table 3.3.6 except where enhanced by the requirements of this Section.

3.6.3 Where plate is supplied from coil, both the tensile tests and the Charpy V-notch tests are to be taken from the de-coiled plate in accordance with the frequency specified for the Grade as required by this Section.

Existing paragraphs 3.6.3 to 3.6.8 are to be renumbered 3.6.4 to 3.6.9.

Chapter 13

Requirements for Welded Construction

CORRIGENDUM

■ *Section 4*
Specific requirements for fusion welded pressure vessels

4.8 Mechanical requirements

4.8.5 **Transverse bend test**. The bend test specimens are to be removed and tested in accordance with the following requirements:

(a) Two bend test specimens of rectangular section are to be cut transversely to the weld, one bent with the outer surface of the weld in tension (face bend), and the other with the inner surface in tension (root bend).

(b) The specimen dimensions are to be in accordance with Chapter 11 and ~~2.1.3~~ 12.

Section numbering in brackets reflects any Section renumbering necessitated by any of the Notices that update the current version of the Rules for Materials.

Chapter 3

Table *3.2.3*	*Reference* 2.4.3 *now reads* 2.4.5. *Reference* 2.4.4 *now reads* 2.4.6. *Reference* 2.4.5 *now reads* 2.4.7. *Reference* 2.4.12 *now reads* 2.4.14.
Table *3.3.6*	*Reference* 3.6.7 *now reads* 3.6.8.

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